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Behind the Curtains of e-State: Determinants of Online Sexual Harassment Among Estonian Children

Kadri Soo*, Mare Ainsaar & Veronika Kalmus

Abstract

This article analyses the risk of receiving online sexual messages and experiencing harm among Estonian children. In particular, the paper examines the association between receiving sexual messages and behavioural, psychological and demographic characteristics, and the social mediation of children's Internet use. Estonian data from 'EU Kids Online' survey are used, involving 780 children aged 11-16. Results demonstrate that 19% of children who use the Internet have received online sexual messages, and 6% have felt disturbed. The probability of receiving sexual messages online is higher for children with risky online and offline behaviour and psychological difficulties. Perceiving online messages as sexually harassing is higher among children with excessive Internet use, lower levels of parental monitoring and higher levels of peer mediation of Internet use. The risk of exposure to harassing sexual messages also differs by age and, more notably, by the minority status. Mediation by parents and teachers plays an insignificant role in reducing teenagers' risks of receiving sexual messages.

Keywords: sexual messaging, online sexual harassment, children, social mediation of Internet use, Estonia.

Introduction

Technological change, along with radical economic reforms, has been a crucial component of Estonian post-socialist transition. Specifically, 'internetisation' has become one of the central symbols of the rapidly changing society, leading to a widely held perception of Estonia as a leading e-state (Runnel et al. 2009). The Internet has become an important part of everyday life, particularly for the younger generations. It plays a powerful role in children's development, communication, education, and leisure activities, allowing them to socialise outside the family and create their own cultures with their peer groups (Lwin et al. 2008, Subrahmanyam & Greenfield 2008).

While the Internet offers plenty of opportunities and benefits for children, it also involves a number of risks, which vary from disclosure of personal information to paedophilia and sexual exploitation (Hasebrink et al. 2008). One of the most serious threats is the 'sex predator', who uses the Internet to establish contacts with children for the purpose of sexual abuse in online or offline environments (Lanning 1998).

This article focuses on the experiences of online sexual messages and harassment among Estonian children. Comparative studies place Estonia among countries with high levels of children's Internet use and perceived online risks. Estonian children start using the Internet younger and go online more often than their peers in many other European countries (Livingstone et al. 2011a). Surveys indicate that 93% of Estonian children aged 6-17 use the Internet (The Gallup Organisation 2008), and 82% of 9-16 year-olds do it every day (Livingstone et al. 2011a), while the European averages are 75% and 60%, respectively.

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Estonian children are at the top of the EU with regard to having encountered sexual risks online (Livingstone et al. 2011a). A prior study (Turu-Uuringud 2006) shows that five percent of 6-14 year old children communicating with a stranger on the Internet confessed that the stranger had talked to them in a sexual manner, and most of the children (68%) were disturbed by this. Children from ethnic minority groups met strangers offline more frequently than ethnic Estonians did.

Recent quantitative surveys have shown that despite Estonian children's high exposure to online risks, parental awareness and mediation remains at the bottom of the pan-European rankings (Dürager & Livingstone 2012, Kalmus & Roosalu 2012, Livingstone et al. 2011a, The Gallup Organisation 2008). Estonian parents tend to underestimate the likelihood that their child may experience online harm or be at risk, including exposure to sexually explicit images and sexual grooming.

The former studies cover only briefly Estonian children's exposure to online sexual risks and harm; however, more thorough analyses for determining the factors that may lead to such experiences are missing. Furthermore, international studies have rarely taken into account ethnic differences as an explanatory factor. The aim of this article is to provide detailed analyses of children's experiences of online sexual harassment. Estonia as a case is chosen, on the one hand, due to the particularities directly related to the research object (high levels of children's Internet use and perceived online risks, and low parental mediation of the child's Internet use) and, on the other hand, as an example of ethnically divided societies (Vihalemm & Kalmus 2009). In particular, we investigate 11-16 year old children's experiences of sexual communication on the Internet and their vulnerability. We analyse how demographic characteristics, patterns of Internet use, online and offline risky behaviour, psychological characteristics, and the social mediation of Internet use by parents, peers and teachers are related to receiving sexual messages and the perception of being harassed.

Teenagers' sexual behaviour and harassment in cyberspace

Increasing sexual feelings, awareness and interest in the teenage stage of personal development may lead to sexual experimentation, resulting in sexual risk behaviour (Buzwell & Rosenthal 1996). The online environment has several advantages compared to the offline world for young people. The anonymity of the Internet can contribute to close relationship formation and presentation of self-aspects that teenagers would like to possess (McKenna & Bargh 1999), but the de-individualisation in the cyberspace can diminish self-regulation and foster engagement in disinhibited behaviour, including sharing more intimate information (Berson 2003). Communication through the computer screen allows teenagers to discuss sex in a more confident and explicit manner than in face-to-face situations. The use of nicknames and the anonymous online context encourage teenagers to talk about sexual topics and send or post photos/videos of themselves that they probably would not do in real life (Jonsson et al. 2009, Subrahmanyam & Greenfield 2008, Livingstone & Helsper 2007). Teenagers are prone to use the Internet for seeking sexual health information, watching pornographic material, or flirting and talking about sexual topics (Save the Children Finland 2010, Subrahmanyam & Greenfield 2008, De Graaf & Vanweesenbeeck 2006, Kanuga & Rosenfeld 2004). Some young people had their first sexual experience in an online setting (Vybiral et al. 2004). Teenagers not only create relationships and communicate online, but also construct their identity and experiment with their developing sexuality (Siibak & Hernwall 2011, Subrahmanyam & Greenfield 2008).

The findings from the 'EU Kids Online' survey (Livingstone et al. 2011a) demonstrated that a majority of children who receive online sexual messages do not feel disturbed by this experience themselves. However, when a receiver perceives sexual messages as unwelcome, the experience can be classified as sexual solicitation (see Finkelhor et al. 2000) or harassment (Barak 2005). Barak (2005) defines sexual harassment as sending sexual comments, invitations or images directly to a recipient, or posting

these on the online environment where they are available to potential receivers. He argues that the perception of messages as being harassment is influenced by the explicitness, intrusiveness, and repetition of verbal or graphic stimuli, personal attitudes and sensitivities of recipient (Barak 2005).

The likelihood of being a target of sexual solicitation seems to increase in teenage years and is often higher for girls (Baumgartner et al. 2010, De Graaf & Vanwesenbeeck 2006, Wolak et al. 2006, Finkelhor et al. 2000). For instance, 5.6% of male and 19.1% of female adolescents aged 12-17 had been asked on the Internet to talk about sex and to do something sexual when they did not want to do so in the previous six months (Baumgartner et al. 2010). More girls than boys reported receiving requests to send sexy photographs or videos and declared that an unknown person had asked them to have sex online and offered money or gifts in return (Ellonen et al. 2008).

Some surveys indicate that individuals who use the Internet more frequently also engage more often in online sexual behaviour and are more sexually solicited (Baumgartner et al. 2010). The chance of receiving unwanted sexual solicitations increases especially with risky online behaviour such as frequent instant messaging, posting or sending personal information to someone, adding strangers to a buddy list and talking with people not met offline (Mitchell et al 2007, De Graaf & Vanwesenbeeck 2006, Mitchell et al. 2001).

Risky online behaviour has been associated with risky offline behaviour and sensation seeking (Wolak et al. 2008, Peter & Valkenburg 2007, Lin & Tsai 2002). The last term refers to an individual's "need for varied, novel, and complex sensations and experiences and the willingness to take physical and social risks for the sake of such experience" (Zuckerman 1979: 11). Thus, sensation seeking is used to explain a wide range of risk taking and problematic behaviours, including looking for casual dates online and Internet dependency (Peter & Valkenburg 2007, Lin & Tsai 2002). It can be assumed that children who tend to use the Internet in a more risky way also encounter more online sexual harassment.

In addition, rule-breaking offline behaviour (e.g. substance use, aggression) was found to be associated with unwanted sexual online solicitation (Mitchell et al. 2007, Ybarra et al. 2007, Ybarra et al. 2004). Risky (sexual) behaviour in offline settings has also been related to excessive Internet use. The latter (also referred to as Internet dependency or addiction) implies an individual's urge to get online and the inability to control their use of the Internet, which eventually causes various psychological and social difficulties in their lives (Cao & Su 2007, Lin & Tsai 2002). High school students with Internet dependency are more likely to be emotionally less stable, feel more lonely and have depressed moods, and have more conduct, concentration and school problems than their non-excessive counterparts (Cao & Su 2007, Yang et al. 2005, Whang et al. 2003). Cao and Su (2007) argued that Internet addicted students who have more behavioural and emotional problems may be, hence, more criticised by parents and teachers and vent their negative feelings on the Internet. Through Internet activities and communication they can compensate for their problems with a sense of achievement and self-satisfaction. Internet dependents, being more alienated from the real world, are more open to seek online acquaintances and form close relationships in the cyberspace. Consequently, it may be supposed that children who score high on excessive Internet use would be more likely receivers of sexual messages and to perceive harm from it.

Social mediation and exposure to online risks

According to the interpretive reproduction model, children do not simply imitate or internalise the world around them; but they rather collectively produce and participate in their peer culture and contribute to the reproduction of the wider society, appropriating information from the adult world (Corsaro 1997). Significant adults, primarily parents but also teachers, play an essential role in the

development of children's peer culture in interpretive reproduction by mediating information to children and preparing them for interaction with other children and adults in various institutional fields. The social mediation of children's Internet use refers to practises and strategies employed by socialising agents (mostly parents, peers and teachers) to support, monitor and regulate children's online activities (Kalmus 2012). Social mediation, on the one hand, embraces socially supportive practices such as guidance, co-use and co-interpreting, but on the other hand, it consists of setting rules and restrictions.

Social mediation styles by socialising agents are associated with children's online activities and exposure to risks and harm. A more supportive and responsive parenting style usually affects positively the development of a child's competences (Baumrind 1999) and decreases vulnerability to external dangers. For example, authoritative parenting (high on responsiveness and demandingness) is correlated with a low level of risky online behaviour (Rosen et al. 2008). Dürager and Livingstone (2012) demonstrated that parental restrictions on children's Internet use (of particular applications or activities) decrease the probability of children's exposure to online risks and their experience of harm; the same tendency is observable when parents actively mediate children's Internet use, that is, stay nearby, share or discuss the child's online activities. By contrast, parental monitoring (checking available records of the child's Internet use afterwards) and parents' active mediation of children's Internet safety (guiding the child in using the Internet safely and helping in case of difficulty) tends to be associated with more online risks and experiences of harm among children, suggesting that the latter two strategies of mediation are most likely come after children's negative online experiences.

Analysis by Kalmus et al. (2012) showed that children's online risks and harm perception are positively associated with more support by teachers and peers. This result is quite surprising, but might be explained by hypothesising that the help of teachers and peers is used retroactively, after a child has had a negative online experience.

In relying on previous studies, we expect parental restrictions and active mediation of children's Internet use to be related to a lower probability of children receiving sexual messages or images online. Furthermore, we anticipate some positive associations between children's experiences of receiving sexual messages and being disturbed by them, and the mediation of teachers and peers.

Method

We use the Estonian data from the international 'EU Kids Online' survey. A random stratified sample of 1000 Internet-using children aged 9-16 years was collected. The Estonian sample of 11-16 year olds consisted of 780 individuals (49.8% boys and 50.2% girls), with a mean age of 13.7 years ($SD = 1.7$). Most of the children (80.8%) reported Estonian as their home language, 17.9% spoke Russian. The remainder (1.3%), who reported both Estonian and Russian as spoken at home, were classified among Estonian-speaking children in the analysis. The data were weighted by using design weights to adjust for unequal probabilities of selection and non-response weights that correct for bias, caused by differing levels of response across different groups of the population (Livingstone et al. 2011a).

The questionnaire first underwent cognitive testing and then pilot testing. Face-to-face interviews took place during spring and summer of 2010 in the children's homes and were supplemented with a private questionnaire for sensitive questions, including those on receiving and sending sexual messages. The latter questions were asked of 11-16 year olds only.

Receiving or seeing sexual messages was measured with a question *In the past 12 months, have you seen or received sexual messages of any kind on the internet? This could be words, pictures or videos.* Those who ticked 'yes' were asked further whether they had been bothered by it in any way. For our analytical purposes, we distributed the sample into three groups: non-receivers who had not received

any sexual messages or images online in the past 12 months; those who had received messages but did not feel disturbed; and those who had received messages and did feel disturbed, which can also be called experiencing sexual harassment. First we provide a comparison of these groups and then employ logistic regression analysis to explain the factors contributing to receiving sexual messages and being disturbed by them. All independent variables (described below) were entered into the models as main effects. No indication of multicollinearity was found.

Time spent online was measured by separate self-evaluated estimates for an average school day and an average non-school day, which were combined to calculate the total time in hours spent online per week.

Excessive Internet use (EIU) was measured by five Likert-type questions on a 4-point scale ranging from 0 – *never/almost never* to 3 – *very often*. The EIU index was created to cover five dimensions of Internet addiction derived by Griffiths (2000). The participants evaluated items like *I have spent less time than I should with family, friends or doing schoolwork because of the time I spent on the Internet*. Cronbach's alpha for the EIU scale is 0.69.

Risky online activities measured self-reported risk-taking Internet usage. The respondents were asked how often during the past 12 months had they (1) looked for new friends on the Internet; (2) sent their personal information (full name, address or phone number) to someone that they had never met face to face; (3) added people they had never met face to face to lists of friends or their address book; (4) pretended to be a different kind of person on the Internet from what they really are; (5) sent a photo or video of themselves to someone whom they had never met face to face. The response categories were 0 – *never/not in the past year*, 1 – *less often*, 2 – *once or twice a month*, 3 – *once or twice a week*, 4 – *every day or almost every day*. The index of risky online activities was generated by summing the responses. Cronbach's alpha for the scale is 0.72.

To measure *risky offline behaviour*, the respondents were asked whether they had during the past 12 months (1) drunk alcohol so much that they got really drunk; (2) missed school without parents knowing; (3) had sexual intercourse; (4) been in trouble with their teachers and (5) with the police. The responses were summed up for an index of risky offline behaviour with a scale ranging from 0 to 5.

To measure *psychological difficulties*, Goodman and colleagues' (1998) *Strength and Difficulties Questionnaire* (SDQ) was adapted. Answers were given on a 3-point scale: 0 – *not true*; 1 – *a bit true*; 2 – *very true*. In order to reduce the number of independent variables in regression analysis and to avoid multicollinearity, the scores for sub-questions about emotional status, conduct problems and peer problems (altogether 15 items) were summed up for the total Psychological Difficulties Scale ranging from 0 to 30, where a higher value means more difficulties. Cronbach's alpha for this item is 0.64.

Sensation seeking was measured by using two items: (1) *I do dangerous things for fun* and (2) *I do exciting things, even if they are dangerous* (Stephenson et al. 2003). Answers were given on a 3-point scale: 1 – *not true*, 2 – *a bit true*, and 3 – *very true*. Cronbach's alpha for this index is 0.68.

For *self-efficacy*, a brief adapted version of the General Self-Efficacy scale from Schwarzer and Jerusalem (1995) was used. Cronbach's alpha for the self-efficacy index is 0.59.

A distinctive feature of the 'EU Kids Online' survey is that it asked children about the social mediation of Internet use as practised by three agents of socialisation – parents, teachers and peers (Livingstone et al. 2011a). Answers were given on a scale of 1 – *yes*, 0 – *no* to all questions except those asked about parental restrictions. We included six indices of parent, peer and teacher mediation in our analysis. All indices were formed by summing up the affirmative responses.

Parental active mediation of the child's Internet use included five questions asking whether parents sometimes: *Talk to the child about what s/he does on the Internet*; *Stay nearby when the child uses the Internet*; *Encourage the child to explore and learn things on the Internet on their own*; *Sit with the child while s/he uses the Internet*; *Do shared activities together with the child on the Internet*.

Parental active mediation of the child's Internet safety was measured by six questions asking whether parents have ever: *Explained why some websites are good or bad; Helped the child when something is difficult to do or find on the Internet; Suggested ways to use the Internet safely; Suggested ways to behave towards other people online; Talked to the child about what to do if something on the Internet bothered the child; Helped the child in the past when something has bothered them on the Internet.*

Parental monitoring, measured by four questions, indicates whether at least one of the parents sometimes checks available records of the child's Internet use: *Which websites the child visited; The child's profile on a social network or online community; Which friends or contacts the child adds to a social networking profile; The messages in the child's email or instant messaging account.*

Parental restrictive mediation included six indicators of rules set by parents that restrict the child's use of particular applications or activities: *Give out personal information to others on the Internet; Upload photos, videos or music to share with others; Download music or films on the Internet; Have one's own social networking profile; Watch video clips on the Internet; Use instant messaging.* Responses were coded on a scale 0 – *can do this anytime*, 1 – *can only do with permission or supervision*, or 2 – *can never do*.

Teacher mediation was measured by eight questions. Six of them were similar to the questions asked about the parents' *active mediation of the child's Internet safety*; one question asked *whether teachers had made rules about what children can do on the Internet at school*, and one asked *whether teachers had talked to children about what they do on the Internet.*

Peer mediation was measured by five questions on *active mediation of Internet safety*; the only question about safety advice not asked about peers was *talking about what to do if something on the Internet bothered the child.*

Results

Altogether 13% of 11-16 year old Estonian children who used the Internet reported that they had received or seen sexual messages online without being disturbed, and six per cent had received sexual messages and had been disturbed. More than half of all receivers of sexual messages had encountered a sexual message more often than once a month, and every fifth at least once a week.

Table 1 displays some demographic differences in exposure to online sexual messages. Girls were more often targets of sexual messaging, and they were more likely to be disturbed than boys ($\chi^2 = 8.77$, $df = 2$, $p < 0.05$). Also, Russian-speaking children were more exposed to sexual messages on the Internet and perceived harm more often than Estonian-speaking children did ($\chi^2 = 21.20$, $df = 2$, $p < 0.001$). Older children reported receiving sexual messages more often, but were less disturbed by the experience than younger ones ($\chi^2 = 25.3$, $df = 2$, $p < 0.001$).

Table 1: Teenage experiences (seeing/receiving) of sexual messages by gender, home language and age (%)

Groups of children		Non-receivers	Receivers not disturbed	Receivers disturbed
Gender	Boys	83.6	12.7	3.7
	Girls	78.0	13.0	9.0
Home language	Estonian	83.7	11.4	4.9
	Russian	66.3	19.7	14.0
Age	11-13	88.3	5.7	6.0
	14-16	74.7	18.5	6.8

Source: authors' calculations, based on data from EU Kids Online Survey.

Table 2 presents indicators of Internet use, children's psychological characteristics and mediation of Internet use by gender, home language and age. The results indicate that boys spent more time online and demonstrated more sensation seeking than girls. Girls reported higher parental and peer mediation of Internet use.

Russian-speaking children spent more time on the Internet and took more risks online. Estonian-speaking children, however, tended to use the Internet more excessively. A comparison of means demonstrated that the parents of Estonian-speaking children practise restrictive mediation more often, while Russian-speaking children reported a higher level of parental monitoring of their Internet use. Remarkably, Estonian-speaking children referred to a significantly higher mediating role of teachers than Russian-speaking children did. For instance, almost all (91.2%) Estonian-speaking children admitted getting at least one kind of advice on Internet use from their teachers, compared to 82.6% of Russian-speaking children.

The T-test demonstrates that age, as could be expected, was one of the most significant demographic determinants of children's online and offline behaviour. Older children used the Internet longer and took more online risks, but they were also more adventurous and sensation-seeking in the real world. At the same time they had higher self-efficacy, less psychological difficulties, lower scores of parental mediation, but stronger influence from peers and teachers concerning their Internet use.

Table 3 presents results of logistic regression analysis for predicting children's experiences of receiving sexual messages and perceiving harm. In the first and the second model, receivers not disturbed and receivers disturbed were compared with non-receivers. The third model compares only receivers, so that the respondents who were not disturbed constituted the reference group for those who were disturbed by sexual messages.

The results indicate that risk-taking online and offline behaviour, higher scores of psychological difficulties and older age are associated with the risk of receiving sexual messages. Russian home language was a significant predictor of receiving sexual messages and perceiving those messages as harmful. No significant differences were revealed between receivers and non-receivers of sexual messages in terms of parental, peer or teacher mediation of Internet use.

Table 2: Behavioural and social characteristics of Estonian teenagers using the Internet by gender, home language and age (means)

Variable (scale range)	Gender		Home language		Age	
	Male	Female	Estonian	Russian	11-13	14-16
Time spent online (12-270)	127.51*	117.32*	118.69*	138.89*	108.97*	133.73*
Risky online activities (0-20)	3.03	3.27	2.95*	4.11*	2.68*	3.52*
Excessive Internet use (0-15)	3.45	3.33	3.55*	2.64*	3.31	3.45
Risky offline behaviour (0-5)	0.79	0.70	.73	.80	0.41*	1.03*
Sensation seeking (2-6)	3.33*	2.79*	3.07	3.01	2.90*	3.20*
Psychological difficulties (0-30)	6.04	6.27	6.10	6.41	6.43*	5.93*
Self-efficacy (0-8)	4.72	4.90	4.77	5.03	4.61*	4.99*
Parental active mediation of Internet use (0-5)	1.92*	2.14*	2.02	2.07	2.20*	1.89*
Parental active mediation of Internet safety (0-6)	2.96*	3.27*	3.11	3.10	3.53*	2.77*
Parental restrictive mediation (0-6)	1.12	1.08	1.15*	0.86*	1.48*	0.78*
Parental monitoring (0-4)	0.73*	1.03*	0.84*	1.07*	1.00*	0.78*
Peer mediation (0-5)	2.29*	2.63*	2.45	2.51	2.24*	2.64*
Teacher mediation (0-8)	3.63	3.87	3.91*	2.98*	3.53*	3.93*

* Statistically significant differences ($p < .05$) between groups based on t-test.

Source: authors' calculations, based on data from EU Kids Online Survey.

Table 3: Perception of sexual messages (odds ratios from logistic regression analysis with behavioural, demographic, and social characteristics)

	Model 1 Receivers not disturbed compared to non- receivers	Model 2 Receivers disturbed compared to non- receivers	Model 3 Receivers disturbed compared to receivers not disturbed
Time spent online	1.05 [†]	0.10	0.99*
Risky online activities	1.18**	1.25**	0.87
Excessive Internet use	0.91	1.13	1.38*
Risky offline behaviour	1.30*	1.43 [†]	1.34
Sensation seeking	1.17	0.64	0.53 [†]
Psychological difficulties	1.15**	1.20**	1.14
Self-efficacy	1.13	1.32	1.10
Parental active mediation of Internet use	1.09	1.23	1.51
Parental active mediation of Internet safety	0.94	1.13	1.07
Parental restrictive mediation	0.92	0.80	0.56
Parental monitoring	1.23	0.81	0.42*
Peer mediation	1.03	1.42 [†]	1.62 [†]
Teacher mediation	1.05	0.96	1.14
Boys	0.77	0.50	0.50
Girls (reference group)	1	1	1
Non-Estonian home language	1.49	3.54*	6.41*
Estonian (reference group)	1	1	1
Age (continuous)	1.73***	1.38*	0.62*
Nagelkerke R ²	0.35	0.38	0.45
χ ² (df)	109.37(16)***	69.85(16)***	37(16)**
N	486	446	104

[†] p < 0.1, *p < 0.05, **p < 0.01, ***p < 0.001.

Source: authors' calculations, based on data from EU Kids Online Survey.

A comparison of children who had received sexual messages on the Internet and had been disturbed by it with those who had gotten messages without perceiving harm demonstrated a different pattern (Table 3). Younger children were more likely to report being disturbed by sexual messages than older children, and Russian-speaking children had a higher risk of perceiving sexual messages as upsetting.

The receivers who were disturbed spent less time on the Internet, but their Internet use was more excessive according to their own evaluation, compared with receivers who did not feel disturbed. The respondents who were disturbed by receiving sexual messages reported a lower extent of parental monitoring than those receivers who did not feel disturbed. Interestingly, receivers who were disturbed scored higher on peer mediation than other groups. Sensation seeking, self-efficacy, parental active and restrictive mediation styles, and teacher mediation were insignificant indicators when controlled for other variables in the model.

Discussion and conclusions

This paper examined the patterns and determinants of Estonian children's risk of receiving sexual messages and experiencing harassment online. The share of Estonian children aged 11-16 who had seen or received sexual messages on the Internet was 19%, while six percent admitted to being disturbed

by the experience. These shares are somewhat higher than EU averages, which are 15% and 4%, respectively (Livingstone et al. 2011a). Similar findings to Estonia can be found in some other Eastern European countries such as Romania, the Czech Republic and Lithuania (Livingstone et al. 2011a). It can be explained with the argument that in Eastern European countries, labelled as 'new use, new risk' countries in terms of children's Internet use (Livingstone et al. 2011a), regulatory and awareness raising activities have lasted for a shorter period of time compared to Western European countries.

In line with several previous studies, our results indicated that children's risk-taking online behaviour is an important determinant of receiving sexual messages and experiencing harm. Children who seek new friends online, disclose personal information to persons they have never met face-to-face, add them to friend lists or send them a photo or video of themselves can easily become recipients of unwanted sexual messages. The Internet's disinhibiting effect and anonymity can lessen awkwardness and encourage people to express themselves or act out more openly than in face-to-face situations (Suler 2004). More ingenuous self-disclosure in social networking sites, instant messaging or chat rooms may be interpreted as a sign that individuals are open to communication with strangers and talking about intimate topics. This is particularly valid for youths who, as a result of posting sexually suggestive photographs of themselves on social networking sites, are more likely to receive sexual solicitations (Wolak et al. 2008, Dombrowski et al. 2007).

Our analysis indicated that risky behaviour in the offline world is associated with receiving sexual messages online without being disturbed. It may be explained by the 'risk migration' hypothesis, which asserts that a person who takes risks offline is more prone to do the same in online settings and is, therefore, more likely to experience sexual messages online (Hasebrink et al. 2011, Livingstone and Helsper 2007). Excessive Internet use was the only Internet use characteristic linked with a higher risk of encountering online sexual harassment. The results also demonstrated that both groups of receivers (disturbed and not disturbed) reported more psychological difficulties than children without experiences of sexual messaging. These findings lead to the conclusion that online sexual communication can, in one way or another, be related to the psychological disturbance of children; however, this study does not allow for examining the causality of this relationship. Children facing emotional difficulties, social exclusion and relational problems with peers may tend to use the Internet more excessively and vent their concerns online by compensating for their need for attention and making virtual friends (Whang et al. 2003). Another explanation, proposed by the vulnerability hypothesis (Livingstone et al. 2011b), is that children with psychological difficulties and an inclination to excessive Internet use are more vulnerable to online sexual risks and harm than psychologically healthy and less immoderate users of Internet.

Previous research has shown that parental mediation of children's Internet activities and appropriate sex education protect children from exposure to online risk and violence (Dürager & Livingstone 2012, Greenfield 2004). With just one exception, our analysis did not reveal any statistically significant relationships between parental and teacher mediation and the probability of being a target of online sexual messaging after controlling for other variables. The limited effectiveness of parental activities on preventing children from online harassment is surprising, but can be explained with the higher autonomy of Estonian children compared with children from some European countries (Ainsaar 2007) and a relatively high proportion of Estonian children (44%) ignoring parental efforts to mediate their Internet use (Livingstone et al. 2011a).

Inconsistent with Dürager and Livingstone (2012), our results demonstrated that children who reported being disturbed by receiving sexual messages found that their parents practise less monitoring than those children who reported not being disturbed. However, in line with Kalmus et al. (2012), we found a tendency that children who experienced online sexual harassment reported higher peer support than children who had not received sexual messages or had not been disturbed by the experience. It may be assumed that Estonian children who have encountered sexual messaging tend to trust their peers more than parents or teachers and prefer to consult with a friend in case of

negative experiences. Also, a qualitative study on teachers' and pupils' knowledge of Internet risks indicated that children usually do not discuss online risks with their parents (Randver 2010). This may refer to a generation gap regarding new media use. Previous studies have shown that the younger generation in Estonia has, in a number of aspects, adapted to the developments of the information and consumer society more quickly than older generations (Kalmus et al. 2009). This, in turn, brings about changes in the process of socialisation: the importance of peers and youth culture as agents of socialisation is gradually growing compared to school and family (Kalmus 2007). Indeed, Estonian parents are relatively passive in mediating children's Internet use (Kalmus & Roosalu 2012), thus, leaving a greater role for peer group influence and self-socialisation in online environments.

On the individual level, gender did not play a statistically significant role in online sexual messaging, although girls slightly outnumbered boys among the receivers of sexual messages and among those who had experienced harm. In line with prior findings (Baumgartner et al. 2010, Finkelhor et al. 2000), the chance of receiving sexual messages increased with age, and younger children were more likely to report being disturbed than older respondents. Older children practice more complex and interactive Internet use, spend more time online, are less supervised by parents and take more risks than younger ones (Livingstone et al. 2011a, Livingstone 2006, Wolak et al. 2006), therefore, they can also be more at risk of receiving sexual messages. The higher probability of experiencing harm among younger children may be explained by their lower awareness of sexual issues, which may cause disturbance when confronted with sexual content (Priebe et al. 2010).

One of the most important findings of this study is that Russian-speaking children reported receiving sexual messages more often compared to Estonian-speaking children, and they were significantly more likely to experience harm. One explanation can be that Russian-speaking children also tended to take more risks while using the Internet, their parents applied fewer restrictions on their online activities, and they received less Internet safety advice from school. All these factors may contribute to higher exposure to online sexual risks and harm. Interestingly, prior studies in Estonia have also revealed that Russian young people have experienced more offline sexual abuse (Soo 2004) and sexual harassment than their Estonian peers (Salla & Surva 2010). Thus, it seems that Russian-speaking children and young people may be subject to sexual risks more than Estonian-speaking children, both online and offline. This difference may be due to less advanced sexual education in Russian-language schools compared to Estonian-language ones, which was revealed in a lower awareness of sexual health issues among Russian-speaking children (Part et al. 2011, Trummal et al. 2011). Besides, Russian young people, when answering sexuality and sexual abuse related questions in a school survey exhibited more signs of discomfort compared to Estonians (Priebe et al. 2010); thus, Russian-speaking children may also perceive sexual behaviour on the Internet to be more disturbing than Estonian-speaking children. Furthermore, our observations suggest that the amount of awareness-raising activities regarding sexual behaviour both offline and online, targeted at Russian-speaking children, is probably lower compared to the number of campaigns in Estonian. The extent of such gap, however, remains an object for further studies.

In conclusion, children who take more risks in offline and online settings use the Internet more excessively, have more emotional and social problems, and are also more likely to be exposed to sexual harassment on the Internet. Particularly, younger and Russian-speaking children can be more vulnerable to online sexual risks and harm. The remarkable differences between Estonian-speaking and Russian-speaking children imply that the specificity of ethnic minorities with regard to online risks and safety awareness in Estonia and other countries needs to be addressed more profoundly in further studies. As a possible theoretical implication, we suggest that the ethno-cultural background of children and their families needs to be considered as a significant individual-level factor influencing the path from Internet use to online risks and harm.

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